



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,801	09/26/2003	Hans Van Der Laan	081468-0306135	7895
909	7590	01/25/2005	EXAMINER	
PILLSBURY WINTHROP, LLP			FULLER, RODNEY EVAN	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

Office Action Summary	Applicati n No.		Applicant(s)	
	10/670,801		VAN DER LAAN ET AL.	
	Examiner		Art Unit	
	Rodney E Fuller		2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27-29 is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

RODNEY FULLER
PRIMARY EXAMINER



Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/26/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1 and 18 state: "...a structure configured to increase the pupil filling of the radiation in the pupil of the projection system." The specification states:

(paragraph 0015, line 4 – 7): "If the radiation does not adequately fill the pupil of the projection lens, then the aberration of the lens is not necessarily accurately measured, because it is only sampled for particular paths of radiation through the lens. If there is not a sufficient degree of pupil filling, then higher order aberrations cannot be measured at all."

(paragraph 0028, lines 4-5): "This structure advantageously acts as a random phase diffuser and can substantially fill the pupil of the projection system."

(paragraph 0031, lines 4-5): "...where the mirror is curved to provide a focusing effect and comprises the structure for increasing the pupil filling of the radiation in the pupil of the projection system."

(paragraph 0067, lines 9-10): "In this way substantially complete filling of the pupil of the projection system is achieved."

(paragraph 0073, lines 10-11): "...and therefore increases the pupil filling."

Thus, it is unclear what the applicant is attempting to claim with the language “a structure configured to increase the pupil filling.” (Note: Underline emphasis added by examiner.)

“To increase the pupil filling” is a relative term, and it is unclear what amount of filling is being claimed. Further, the amount of filling cannot not be determined from the specification since, the terms “adequately fill” and “a sufficient degree of pupil filling” are not defined.

Claims 2-17 depend from claim 1 and therefore include the deficiencies of claim 1.

Claims 19-26 depend from claim 18 and therefore include the deficiencies of claim 18.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 15, 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Baselmans, et al. (US 6,60,339)

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

As best the examiner can ascertain the claimed invention, Baselmans discloses all the structure set for the claims. Regarding claims 1 and 18, Baselmans discloses “an illuminator (Fig. 1, ref.# LA) configured to provide a projection beam of radiation; a support structure (Fig. 1, ref.# MT) configured to hold a patterning device (Fig. 1, ref.# MA), the patterning device configured to pattern (Fig. 1, ref.# MA, C) the projection beam according to a desired pattern; a substrate table (Fig. 1, ref.# WT) configured to hold a substrate (Fig. 1, ref.# W); a projection system (Fig. 1, ref.# PL) configured to project the patterned beam onto a target portion (Fig. 1, ref.# W, C) of the substrate; and a measurement system (column 1, line 55) comprising: a diffractive element (Fig. 3A, ref.# 7) and a structure (Fig. 3A, ref.# 5) configured to increase the pupil filling of the radiation in the pupil of the projection system (column 11, lines 23-25), both movable into the projection beam between a radiation system (Fig. 2, above ref.# CO) and the projection system (Fig. 2, ref.# PL), and a sensor module (Fig. 2, ref.# 9) configured to sense radiation that has traversed the projection system to measure wave front aberrations (column 10, line 55) of the projection system.”

Regarding claim 2, Baselmans discloses “wherein said sensor module is configured to measure wave front aberrations of the projection system.” (column 1, lines 29-30)

Regarding claim 15, Baselmans discloses “wherein the structure configured to increase the pupil filling is configured such that the radiation of the measurement system at least substantially fills the pupil of the projection system.” (column 11, lines 23-25)

Regarding claim 17, Baselmans discloses “wherein said projection beam of radiation comprises EUV radiation.” (column 9, line 32)

Art Unit: 2851

Allowable Subject Matter

5. Claims 27-29 are allowed.
6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or suggest a defocus measurement system that comprises "a transmissive grating and a mirror configured to direct the projection beam to illuminate the grating from behind, wherein, in use, the mirror is tilted at an angle relative to the plane of the grating to provide a tilted illumination beam."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney E Fuller whose telephone number is 571-272-2118. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 19, 2005

Rodney E Fuller
Primary Examiner
Art Unit 2851

